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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,254	09/26/2003	Jens-Christian D. Meiners	UOM 0275 PUSP	8836
22045	7590	03/22/2005	EXAMINER	
BROOKS KUSHMAN P.C. 1000 TOWN CENTER TWENTY-SECOND FLOOR SOUTHFIELD, MI 48075			ORTIZ, ANGELA Y	
			ART UNIT	PAPER NUMBER
			1732	

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/672,254

Applicant(s)

MEINERS ET AL.

Examiner

Angela Ortiz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 December 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-20 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 20 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 10-19 are rejected under 35 U.S.C. 102(b) as being anticipated by admitted prior art as set forth on pages 1-3 of the instant specification for the reasons cited in the previous office action.

The admitted prior art substantially teaches the basic claimed process and device that results from the process of molding a microfluidic device having at least one interconnect comprising an elastomeric portion, a substrate and the interconnect connected to the elastomeric portion wherein the elastomeric portion and the substrate together define a fluid passage. See pages 1-3 of the instant specification.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-9 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art as set forth on pages 1-3 of the instant specification, in view of Bauer, USP 4,304,749 for the reasons cited in the previous office action.

The admitted prior art substantially teaches the basic claimed process of molding a microfluidic device having at least one interconnect comprising an elastomeric portion,

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a substrate and the interconnect connected to the elastomeric portion wherein the elastomeric portion and the substrate together define a fluid passage. See pages 1-3 of the instant specification.

However the admitted prior art requires baking and does not set forth a curable contracting resin as claimed.

The added secondary reference teaches as conventional the feature of forming a fluidic structure using a polymeric material that does not require baking, having contracting properties as claimed. A cover 23 and substrate 23 are provided adjacent one another such that there is provided a fluid passage therebetween. A thermoset plastic resin is injected into the mold cavity to encapsulate the assembly, such that it contracts upon solidification. See col. 5, lines 1-15.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to so provide a contractable resin as shown in the added reference, when performing the process set forth in the admitted prior art, for avoiding baking of the resin, and for achieving an encapsulated device securely assembled.

With respect to claims 2-5, note that the admitted prior art shows a glass substrate, and fluid tubing; note that the tubing claimed in claims 3-5 are deemed functional equivalents of one another; should applicant argue that such are not, a species election will be required.

With respect to claims 6-7, note that the resins claimed are equivalent to those materials disclosed in the applied prior art.

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With respect to claim 8, note that both references teach the limitation claimed; see for example, the added reference, figure 3.

With respect to claim 20, note that the Bauer reference teaches a liquid resin at col. 5, lines 15-25 and sets forth an alternative embodiment to injection molding in a mold, wherein use of a mold is avoided by flowing injected material into holes in the assembly and forming rivets, so that the same effect is achieved. See col. 3, lines 27-42 and col. 4, lines 25-65. See also col. 2, lines 50-60 wherein the encapsulating resin may be the same material as the body (which is thermoset). It would have been obvious to use a liquid resin and pouring as claimed, in view of the Bauer reference, for using the same material and achieving an integral molding avoiding unneeded adhesives, and avoiding the use of a mold, which may be cumbersome, and form rivets to achieve the same result. Note that the disclosed thermoplastic resins are curable and are equivalent alternatives to the liquid curable resin material as claimed.

### ***Response to Arguments***

Applicant's arguments filed 20 December 2004 have been fully considered but they are not persuasive.

Careful reconsideration has been given to the claims and arguments of record.

It is noted that no argument has been provided with respect to the product by process claims 10-19.

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With regard to the statement of related art, note that the description provided only describes that which is old, known or conventional in the art, and not applicant's invention.

Applicant argues that the combination does not render the claims obvious because the Bauer device is directed to macrofluidic devices, and does not teach a curable resin to solve the problem of encapsulating a microfluidic device in a thermosetting resin which contracts, but uses thermoplastic resin materials.

With respect to the use of Bauer, note that it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the field of endeavor of the Bauer reference is fluidic devices, which alone is pertinent enough to the claimed method. However, the reference also sets forth a method that is reasonably pertinent to the particular problem with which the applicant was concerned, namely, assembling fluidic devices wherein "the plastic shrinks on cooling and binds the cover plate and body member together in sealing relation", see col. 1, lines 60-65 and col. 3, lines 42-55. One of ordinary skill in the art would certainly have been motivated to look to Bauer for sealing the fluidic devices set forth in the admitted prior art, for achieving a sealed assembly.

With respect to the argued limitation of "curable resins", note that 'curing' is a form of hardening plastic materials, and both thermoplastic and thermoset resins 'cure'

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in the sense that both are hardened sufficiently after molding for subsequent use.

Curable resins are not limited to thermosetting resins. Thus the Bauer reference is pertinent and remains applied. Note further, applicant has not recited in the rejected claim(s) the limitation of 'thermoset' resins, and although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Note that Bauer further sets forth a choice in sealing materials, and describes at col. 2, lines 47-60 and col. 5, lines 15-20, the use of cross-linkable resins as well as the same resin material for all three parts (cover plate, body member and injected material).

Applicant argues that Bauer's use of 'high pressure' injection molding and the molding temperature of the plastic would distort the product being sealed and other defects.

Note that 'high pressure' injection molding is not disclosed in the reference; and while molten resin is preferred, care is taken not to damage the part being encapsulated at col. 2, lines 50-55 and col. 5, lines 20-25 wherein it is suggested to use a plastic of lower melt temperature to avoid damage. Note also col. 1, lines 45-65 and col. 4, lines 25-35 wherein a mold is avoided for achieving the molding of the plastic, thus avoiding 'high pressure' injection molding as argued.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela Ortiz whose telephone number is 571-272-1206. The examiner can normally be reached on Monday-Thursday 9:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Angela Ortiz  
Primary Examiner  
Art Unit 1732

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